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Federal Communications Commission
Office of the Secretary

From: Nicholas Miller [redacted]
Sent: Tuesday, March 24, 2009 12:02 PM
To: [redacted]
Cc: [redacted], Scott Deutchman
Subject: Comment re The Proper Role of Broadband Mapping When Implementing Fiscal Stimulus

Ken—Your article is excellent critique of the ARRA broadband mapping language. It helped me a lot to better understand the issues in this evolving area.

A suggestion on an analytic approach that the FCC should take:

This is fundamentally an exercise to create a GIS database. So the key question becomes the specific data sets that are inputs, and routine updating of those datasets. GIS software is/should be dynamic enough to "portray" the data in lots of different ways, as defined by the user.

So a constructive approach would be to start with a typical big city GIS system that is integrating 3 dimensional right-of-way, traffic, utilities, real estate, public safety assets with commercial data like street addresses, types of businesses, business licenses and residential locations of persons with special needs.

This becomes an incredibly useful planning device, dynamic and relatively easy to maintain (if the relevant data is made available), with appropriate security layers to control who has access to what data.

It is striking that the telecomm utilities/cable ops are among the most resistant to cooperating with public sector GIS efforts. And within cities, we are finding frequently that individual departments are creating their own systems without interconnecting the data sets.

But my basic point—a lot a work has been done already on what it means to "map" an system of hardware and personnel assets that is economically, operationally, and public safety-wise dynamic.

We should build this effort on those experiences, and begin by integrating those existing data sets first.

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From: [redacted] [mailto:[redacted]] **On Behalf Of** Drew Clark (Broadband Census)
Sent: Monday, March 23, 2009 2:59 PM
To: Drew Clark (Broadband Census)
Subject: New on Broadband Census.com | The Proper Role of Broadband Mapping When Implementing Fiscal Stimulus

THE PROPER ROLE FOR BROADBAND MAPPING WHEN IMPLEMENTING FISCAL STIMULUS

Broadband Census.com Research Report

By Ken Austin, Research and Analysis Manager, Broadband Census.com

Editor's Note: This paper was produced by Ken Austin to spur discussion and dialogue about the best way to address the "broadband mapping" provisions of the fiscal stimulus legislation. This document is neither a formal comment nor an official statement of the position of BroadbandCensus.com.

WASHINGTON, March 23, 2009 - Through public hearings on broadband stimulus, it is starkly apparent that demand for spending broadband stimulus funds far outstrips the $7.2 billion in available funds. These hearings, by the Commerce Department's National Telecommunications and Information Administration (NTIA) and Agriculture Department's Rural Utilities Service (RUS), have assembled officials and interested parties to examine and address the gap.

The same is true of the realm of broadband data, and in the $350 million allocated to that task by the American Recovery and Reinvestment Act (ARRA). Consider the competing needs to:

- Produce meaningful data that support existing law;
- Align with key metrics that inform the goals and metrics associated with the emerging National Broadband Strategy
- Allocate resources to projects that are expedited, transparent, and accountable.

Part 1 of this article looks at two laws that set the scope of broadband mapping initiatives addressed in section 8 of the joint NTIA and RUS call for comment.
The conclusion? The broadband mapping provisions associated with the ARRA are:

1. (1) Narrowly scoped;
2. (2) Ideally suited to visually depict unserved areas;
3. (3) Related directly and exclusively to expanding the scope of S.1492, Section 103(c) as amended;
4. (4) Potentially misleading and harmful if allowed to drive and dominate the broader need for good-quality broadband data.

Part 2 of this article responds to the questions about the broadband mapping initiative posed in Section 8 (a through j) of the joint NTIA-RUS call for comment.

Part 2 gives voice to the policy and budget implications of the argument made in Part 1.

Part 1: Narrow Bounds for Broadband Mapping

The joint call reads:

The Recovery Act directs NTIA to establish a comprehensive nationwide inventory map of existing broadband service capability and availability in the United States that depicts the geographic extent to which broadband service capability is deployed and available from a commercial provider or public provider throughout each State

The broadband inventory map envisioned by the Recovery Act is both similar to and yet noticeably different than the language in the Broadband Data Improvement Act of 2008 (BDIA), commonly referred to as S. 1492. Section 103 (c) of S. 1492 reads:

Demographic Information for Unserved Areas—*As part of the inquiry required by subsection (b), the Commission* shall compile a list of geographical areas that are not served by any provider of advanced telecommunications capability (as defined by section 706(c)(1) of the Telecommunications Act of 1996 (47 U.S.C. 157 note)) and to the extent that data from the Census Bureau is available, determine, for each such unserved area—

(1) the population;

(2) the population density; and

(3) the average per capita income.

(Emphasis supplied.)

The Recovery Act adds scope to S 1492. It overlays the requirement to "compile a list" with a burden to "visually depict" results.

That apparently subtle shift in language has the potential for derailing an otherwise focused effort to map existing inventory.

How much of the public budget should go to "visualizing" otherwise useful information?

Parsing the language of broadband mapping under the Recovery Act is a way to start. The inventory map is supposed to:

1. (1) Be comprehensive;
2. (2) Be national in scope;
3. (3) Depict geographic extent;
4. (4) Account for existing service capability;
5. (5) Account for existing service availability;
6. (6) Show where "a commercial provider" or "a public provider" exists in each state.

If one takes only the language of **terms 1, 2, 3 6**, one finds that they result in a "negative" map. The logic generates a "reverse image" that identifies geographies with zero service. It produces exactly the result necessary to address the minimum critical specification of "unserved".

What does it mean to be comprehensive?

Term 6 bounds the scope of broadband mapping. It provides the minimum critical specification called for in term 1

When taken literally, term 6 so limits the utility of "a broadband map" that terms 4 and 5 are impossible to achieve.

When a map shows the extent to which "a commercial provider and "a public provider" exist (emphasis supplied), then the deliverable meets the statute. It does not provide data necessary to discern and make judgments about availability or capability.

The value-add derived from **term 3** is suspect. Some stakeholders may have a need for "a map". It is not at all clear that "a map" is, in and of itself, valuable to any stakeholder other than a digital cartographer. A proper inventory would have greater inherent value than a depictable map. With proper data, people can compare and contrast a wide range of data and use 21st century data visualization techniques of their choosing.

Terms 4 and 5 are bound by The Recovery Act, which specifies existing capability and availability. That language significantly limits the scope, complexity, and cost of mapping. It also limits the utility. No provision is made under

ARRA to ensure that the map is sustained or even sustainable. As written, the language envisions only a "snapshot" of inventory to serve as a baseline.

Meaningful data in support of capability and availability require a larger scope than required of Broadband mapping under the ARRA or by Section 103(c) of S.1492, the Broadband Data Improvement Act.

Assume that we do not accept the low standards set by terms 3 and 6 to be adequate over a range of stakeholders; it could be argued that:

- **Term 4** is the vanguard provision. Capability today is not an accurate picture of capability tomorrow. Capability required for telemedicine is not capability for energy management device control and message services. With no provision for looking forward, the "inventory map" cannot cost-effectively account for capability. If one were audacious enough to create a sustainable inventory that kept track of the provisions of the act indefinitely, who and what would maintain configuration control and how much would that cost?

- **Term 5** expands the narrowest definition of unserved and opens the inquiry to questions of underserved areas. It presumably distinguishes the type of service available by technology, geography, price, and service provider necessary to implement a broadband universal service fund required for sustainable ubiquitous service. Ensuring ubiquity means resolution to the 9-digit ZIP code level. Spending federal resources on "an inventory map" could divert resources from more meaningful outcomes. Budget resources should be apportioned accordingly.

The notion of "an inventory map" gives way to a sustainable data-set when the concepts of availability and capability are seriously addressed.

Care should be taken not to rush broadband data funds into the hands of a small number of players whose approach is inextricable linked to the commercial interests of telecommunications providers. In other words, the policy prescriptions of the ARRA for a national broadband map should not be jeopardized by funneling money into cartographic eye-candy.

With visions of "a national map," long-term policy interests are jeopardized.

- Is the priority substantive data that informs commercial and civic investment decisions?
- Is the priority a snapshot of existing inventory?
- Is the priority expedient and expensive eye-candy?

The choices we make today reverberate for at least a decade.

Part 2: Broadband Data More Fundamental than Broadband Mapping

Section 8 of the Joint NTIA-RUS call asks ten questions: 8a. through 8j. Those questions are repeated here in italics.

Answers to the questions make an effort to be remain consistent with the argument made in Part 1. How does the argument shape, or predispose the answers to the joint call for comment? How would such answers inform policy?

8a. What uses should such a map be capable of serving?

Given the statutory limits outlined in Part 1, such a map should be limited to displaying, on an electronic map, 9-digit ZIP codes where neither commercial nor public broadband service is available.

The map should be limited to its intended purpose, a one-time baseline inventory of existing broadband capability and availability from a commercial provider or public provider throughout each State.

The outcome is a clear picture of "unserved" areas. The snapshot provides a solid baseline against which to measure progress toward at least one service option in each place.

8b. What specific information should the broadband map contain, and

See response 8a., immediately above.

Claims over and above those required to meet the statute are recognizable expansions that drain resources available to meet related public policy interests outside the narrow scope of S.1492, Section 103 (c).

should the map provide different types of information to different users (e.g., consumers versus governmental entities)?

No. "the map" should not reflect different information for different users. It should reflect only a one-time baseline that indicates what regions are unserved in each state. It is a baseline that informs progress against goals and metrics defined in the National Broadband Strategy.

Efforts to collect otherwise meaningful data should be taken separately from such a scope limited map.

8c. At what level of geographic or other granularity should the broadband map provide information on broadband service?

Data should be collected at the 9-digit ZIP code level. If the idea is to find and close all of the gaps, 9-digit ZIP codes provide sufficient resolution.

The Federal Communications Commission's Form 477 data remain inadequate.

Street level data are too detailed for the scope limited broadband map envisioned by the statute. Upkeep is not provisioned and content changes rapidly. The ensuing costs make street level data non-feasible when weighed against a range of priorities.

A database/inventory built on 9-digit ZIP codes can be correlated with a range of other data sets including census tracts, 477 data, political districts, and county plats.

8d. What other factors should NTIA take into consideration in fulfilling the requirements of the Broadband Data Improvement Act, Pub. L. No. 110-385 (2008)?

None. Other data collection priorities should be performed outside the scope of a broadband map.

8e. Are there State or other mapping programs that provide models for the statewide inventory grants?

Yes.

If this question 8e. is limited to the scope of an existing inventory map, then most states have some understanding of where public and private broadband is and is not available by county. Each knows enough to target a few unserved areas immediately. An extensive map – as opposed to an extensive collection of data – is not required to make near-term progress.

Paradoxically, if stimulus works, "the map" is obsolete before it is published. With no provision for sustainability of the data, the national map promises ballooning costs without commensurate benefits.

States, having purchased "a mapping solution" touted across the nation, lament that they have no means for questioning service provider claims that broadband deployment is proceeding well. That is evidence enough that such a map is not sufficient to meet data requirements beyond those of Section 103(c) of S. 1492.

The nationally-touted "mapping solution" marginally satisfies the limited scope of the "existing inventory map." It also comes with a few difficulties.

1. (1) The solution provides a host of other capabilities not required to meet the statue, some of which are glitzy, but have no bearing on policy. This might mean paying far more than necessary.
2. (2) States purchasing such a solution are bound by non-disclosure agreements. Such non-disclosure data will not "roll up" to a national map that can be used by citizens and governments to make informed decisions.

3. (3) If one exhausts the stimulus data budget on creating an existing map of the "negative space," then a long-term approach to data in support of other sections of S. 1492 would be jeopardized.

4. (4) Once created, such a "mapping solution" is difficult to sustain. Government at all levels is hostage to a sole-source information provider. Such a blind spot makes it difficult to negotiate allocations for sustainment costs essential for a broadband Universal Service Fund. Keeping broadband data fresh as service providers merge and deploy new technologies is nearly impossible. It would not be a cost-effective use of data for broadband data.

5. (5) Expending a substantial portion of the broadband mapping effort on an elaborate broadband map – without a good-quality data underlying such a map – is likely to tilt the playing field toward players that make use of proprietary carrier data.

8f. Specifically what information should states collect as conditions of receiving statewide inventory grants?

Entities seeking broadband stimulus resources related to broadband mapping should commit to verifiable outcomes that satisfy the minimum critical specification. Collecting only the data required to meet the statute, which in turn provides a baseline for key policy measures over time.

If one remains focused on the minimum critical specification for the broadband mapping provisions in the ARRA, states should only be required to collect those data that report which areas currently have one or more commercial and one or more public broadband services by 9-digit ZIP code.

If one finds the scope prescribed by the American Recovery and Reinvestment Act to be too narrow, states should be required to collect those data that inform availability and capability over time. Accordingly, a state should be required to report data that provide unrestricted visibility into the range data points envisioned by S. 1492.

When states are compelled to collect other data, the initial instance of scope-creep expands.

8g. What technical specifications should be required of state grantees to ensure that statewide inventory maps can be efficiently rolled up into a searchable national broadband database to be made available on NTIA's website no later than February 2011?

Files in .xml format will be most useful. They can be used in creating a map of existing inventory. They can also be used by thousands of people for other reasons.

8h. Should other conditions attach to statewide inventory grants?

Yes, data paid for with federal funds should be placed in the public domain.

Data paid for with federal funds but not placed in the public domain shall be accounted for by reporting the amount paid, the type of data purchased, and the time period that the data contract covers.

If non-disclosure agreements preclude even that modest disclosure, the risk and life cycle cost of purchasing data from that source should be accounted for.

8i. What information, other than statewide inventory information, should populate the comprehensive nationwide map?

None. The scope of the inventory map should be constrained to its rightful purpose, an inventory of existing service by "a commercial" or "a public" service.

8j. The Recovery Act and the Broadband Data Improvement Act (BDIA) imposes duties on both NTIA and FCC concerning the collection of broadband data.

Given the statutory requirements of the Recovery Act and the BDIA, how should NTIA and FCC best work together to meet these requirements?

Responding specifically from the position that the statutory scope of broadband mapping is limited and that it expands the scope of a similar result compelled by other legislation, the two responsible organizations can:

1. Be clear that broadband mapping under the Recovery Act (term 3 in Part 1) creates a one-time baseline that satisfies Section 103(c) of S. 1492.
2. Agree that capability and availability (terms 4 and 5) are not achievable if the modest standard imposed for identifying unserved geographies (term 6) is taken as the standard for broadband data writ large.
3. Agree that allowing the scope of the broadband map to creep beyond that which has already occurred (depict visually) diffuses the efforts for meaningful data collection.
4. Agree that budgets applied to broadband mapping should be proportionate with a wider need for broadband data. Budget resources applied to a "broadband map" should be limited to the scope of the statute.
5. Agree that the Federal procurement community's standard works for broadband mapping.

Conclusion

This article makes a case that broadband mapping as defined in the ARRA:

- Reflects a snapshot of existing conditions. No provision is made for sustainability of data, or life cycle cost.
- Makes a limited contribution to the range of data collection needs defined in S. 1492.
- Increases the scope of S. 1492 by increasing task complex and cost, without adding additional information.
- Is narrow in its focus on "mapping," and should remain that way.

In modifying the scope of S.1492 to include "a depictable map," the ARRA diminishes the relative value of a proper inventory and data set which might be used as raw data for maps that suit a range of needs.

By focusing narrowly on "a map," policy-makers would fool themselves and those who rely on meaningful data to make supportable investment decisions.

The perception that "broadband mapping," as defined in the ARRA, will result in a single, scalable, and sustainable "national map" that simultaneously supports infrastructure management and civil debate impairs focus and poses unending sustainment cost, especially if the source data are proprietary.

The second greatest risk is that the focus becomes merely "a map" and is therefore devoid of meaningful substance.

It is crucial to consider that data underlying state-by-state and national broadband maps, are useful for thousands of applications, some not imaginable today, and others having nothing to do with geography. Any public hearing, and presumably any considered response, would recognize that the inherent value lies in the data, not "the map".

Resources should be apportioned accordingly. A depictable map should not siphon resources from the goals and metrics that are established for National Broadband Strategy and other data-collection efforts that inform the National Broadband Data Improvement Act.

Tags: broadband data, Broadband Data Improvement Act, broadband mapping, broadband stimulus, BroadbandCensus.com,fiscal stimulus, S. 1492

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